

JOURNAL OF MYCOLOGY.

Vol. IV. MANHATTAN, KANSAS, SEPTEMBER 1888.

No. 9.

SYNOPSIS OF THE NORTH AMERICAN SPECIES OF HYPOXYLON AND NUMMULARIA.

BY J. B. ELLIS AND BENJA. M. EVERHART.

(Continued from page 70.)

HYPOXYLON XANTHOSTROMUM, Schw. Syn. N. Am. 1212.—Seriately erumpent in cracks of decorticated oak limbs, Bethlehem, Pa. (Schw.) Seated on a thin crust which is not at all effused. In a simple series emerge distinct tubercles, which are sometimes confluent for an inch or more, brown-black, rugose, larger mixed with smaller ones in the same group; ostiola indistinct. A vertical section of the tubercles shows one or more rather large, globose perithecia enclosed in the grumose yellow stroma which on the outside is black. Sporidia (sec. Cke. l. c.) 12 x 6 micr.

HYPOXYLON CATALPÆ, Schw. l. c.—On bark of Catalpæ. Bethlehem, Pa. (Schw.) Seriately erumpent through cracks in the bark, of a rusty color at first, then black. Tufts or pulvinuli longitudinally confluent. Surface of the stroma granular from the underlying perithecia, finally black and rugose. Perithecia abundant in the scanty black stroma; ostiola papilliform, deciduous. Sporidia (Cke. l. c.) 13 x 6 micr.

HYPOXYLON TRANSVERSUM, Schw. (l. c. 1180.)—Transversely erumpent through the bark on a trunk of *Betula carpinifolia*, Mauch Chunk, Pa. (Schw.) Large, subpulvinate, subimmersed in the bark and protruding in a pulvinate manner above, sometimes angular-turbinate. Surface irregularly rugose or even, black. Perithecia peripheric, ovate, shining black inside. Stroma dark brown, pulverulent, one inch long, $\frac{1}{4}$ inch thick. Ostiola distinctly prominent, plano-conic. Sporidia (Cke. l. c.), 12 x 4 micr.

HYPOXYLON RAMOSUM, Schw. in Grev. XI, p. 132.—On branches, Indiana. Convex, erumpent, pulvinate, black, (1 cm.) Perithecia subglobose, scattered, black, not prominent, pierced above. Asci

cylindrical. Sporidia sublanceolate, continuous, brown, straight or curved, $16-18 \times 3\frac{1}{2}$. This seems to be a different thing from *Sphaeria ramulosa* Schw. which appears referable to *Xylaria*.

IV. PLACOXYLON.—Stroma broadly effused.

(a) *Externally colored, not black.*

HYPOXYLON PERFORATUM, Schw. Syn. Car. No. 45.—On dead oak, maple, ash and other limbs. Common. Also on dead petioles of *Sabal serrulata*, Florida (Calkins). Stroma (on the bark or wood) superficial, effused or tubercular convex (2–4 mm), often interruptedly confluent for several cm. in extent, dark or purplish-rust color dotted with the minute, white-margined, punctiform ostiola. Conidial layer cinereous-white, pulveraceous. Conidia minute, ovoid or subglobose on short subsimple or branching hyphae. Perithecia submonostichous, globose small ($\frac{1}{4}-\frac{1}{3}$ mm.), lying near the surface of the stroma, crowded, mostly not distinctly prominent. Asci cylindrical, $60-90 \times 7-9$ (p. sp.) with a long filiform base and overtopped by the filiform paraphyses, 8-spored. Sporidia obliquely uniseriate, ovate, with the ends mostly obtuse, nearly straight or subinequilateral, dark-brown $10-14 \times 5-7$. Bears a general resemblance to *H. rubiginosum*.

HYPOXYLON RUBIGINOSUM, (Pers.) Syn. p. 11.—Fr. Summ. Veg. Scand. p. 384. On decorticated limbs of various deciduous trees. Common in this country and in Europe. Around Newfield, N. J., mostly on *Acer* and *Quercus*. On beech and *Liriodendron*, Penna. (Everhart). On various dead limbs, Fla. (Calkins). Stroma mostly broadly effused, but also occurring in small patches (2–4 mm. across), bright ferruginous-red, finally black, tolerably thick (1–2 mm.), surface nearly even or distinctly mammillose from the projecting perithecia. Conidial layer pulverulent, thin, at first dirty olivaceous-yellow, then bright ferruginous. Conidia obovate or oval, very small, acrogenous on short, sparingly branched sterigmata. Asci cylindrical, long pedicellate, 8-spored with slender filiform paraphyses, 60×6 micr. (p. sp.). Sporidia monostichous, ovate, inequilateral, or nearly straight, dark brown, 10×15 micr. The perithecia appear first in the middle of the stroma and spread towards its margin which thus remains for some time sterile. The perithecia are larger than in *H. perforatum* and more evenly effused and the stroma is of a brighter color. At first and around the margin of the stroma the perithecia stand quite separate but they are finally closely packed.

HYPOXYLON SUBCHLORINUM, Ell. & Calkins.—On bark of dead limbs of some deciduous tree. Florida. (Calkins Nos. 55 and 139). Stroma suborbicular, thin (1 mm.) flat $\frac{1}{2}-1$ cm. diam.

sometimes continuous or interruptedly confluent for 5 or more cm. purplish rust color with a thin sterile margin at first but this generally disappears leaving the margin abrupt and rounded, surface papillose from the slightly prominent rounded apices of the perithecia which are in a single layer, subglobose, small ($\frac{1}{4}$ mm.) numerous but not crowded so as to be much compressed, covered above with a thin stromatic layer which is of a dirty greenish yellow within, at least in the young fresh growing state, and finely white-punctate from the minute ostiola but both the internal yellow color and the white punctate ostiola finally disappear. Asci (p. sp.) 60—65 x 7 with a stipitate base 30—40 micr. long. Sporidia uniseriate, elliptical or subnavicular opaque, 7—8 x $3\frac{1}{2}$ —4. The general appearance, color and mode of growth is that of *H. rubiginosum*, Pers. from which it differs in its yellow stroma, smaller perithecia and sporidia, nor can it be referred to any of the species already enumerated having the internal substance of the stroma yellow. The yellow stroma and smaller sporidia will also distinguish this from *H. perforatum* Schw.

HYPOXYLON MINIATUM, Cke. Grev. VII, p. 80.—On decorticated wood, Florida (Calkins), Clyde, N. Y. (O. F. Cook, Jr.) Effused. Stroma 1—2 cm. long, $\frac{1}{2}$ —1 cm. wide about 1 mm. thick convex in the small specimens, flattened in the larger ones, margin definite rounded, rusty-red, lighter and brighter than in *H. rubiginosum*, black within, surface densely and rather acutely papillose from the projecting apices of the closely packed ovate, monostichous perithecia which are about $\frac{1}{2}$ mm. long and $\frac{1}{3}$ mm. wide. Asci 75—80 x 7—8 (p. sp.). Sporidia uniseriate, short navicular, opaque, 10—14 x 5—6. Differs from *H. rubiginosum* in its much smaller perithecia and the brighter color of the stroma. The sporidia are larger than stated by Cooke in Grev. but our specimens seem to be referable to his *H. miniatum* as far as we can see.

HYPOXYLON FENDLERI, Berk. Grev. XI, p. 132.—On rotten wood, Venezuela. Extra limital but will probably be found in Central America. Effused, determinate, thick, rugose, yellow, finally black-brown ("atrofusum"). Perithecia distinct, globose, elevated, with black papilliform ostiola. Asci cylindrical, sporidia narrow-elliptical, straight or somewhat curved, dark, 12—13 x 4. Somewhat like an effused state of *H. multifforme* or a thick form of *H. rubiginosum*, at length nearly black.

HYPOXYLON ATROPURPUREUM, Fr. Summ. Veg. Scand. p. 384.—On bark of *Tilia*, Iowa (Holway). On bark, British Columbia (Macoun). Stroma broadly effused, continuous or interrupted, thin, purplish-black becoming nearly black, surface minutely

papillate from the slightly prominent perithecia which are of medium size and are closely packed in a single layer. Asci cylindrical, 50—60 (p. sp.) long 7—8 micr. broad. Sporidia obliquely monostichous, ovate, sub-acute at each end and slightly inequilateral, opaque, $10-14 \times 5-6$.

HYPOXYLON PICEUM, Ellis, Am. Nat. Feb. 1883, p. 194.—On rotten wood, Iowa, (Holway). Stroma effused, subelliptical or elongated, often by confluence forming patches 4—8 cm. long by half as wide, dark brown, nearly black within, surface wrinkled and covered with a dull yellow conidial growth which also spreads over the surface of the wood adjacent and consists of short, rudimentary, irregularly branched hyphæ covered with the minute, dust like conidia. Perithecia in 2—3 layers densely crowded and angular by compression, the lower layer much elongated. Ostiola minute, scarcely visible. Asci? Sporidia navicular, brown, $11-12 \times 4$. The stromata resemble blotches of black pitch dusted over with yellow meal and are of about the consistency of beeswax.

HYPOXYLON FUSCOPURPUREUM. Schw. Syn. N. Am. 1209—On rotten wood and bark, Carolina and Penna. (Schweinitz). Variously effused, margin generally sterile. Outer crust rather hard, black and shining within, surface elegantly purple, at length dark-purple, regularly granulose from the subjacent perithecia which are oblong ovate, polystichous, numerous, small, immersed in the shining black stroma, staining the wood or bark around it black, inseparably adnate, extending for an inch or more in length and preferring depressions in the surface of the wood. Sec. Cooke, l. c. the sporidia are $14-7$ micr. The specimen in Rav. F. Am. 653 on bark of ash, seaboard of So. Ca. has sporidia $9-11 \times 4\frac{1}{2}-6$ and looks more like a smooth form of *H. rubiginosum*.

Hypoxylon florideum, B. & C. Grev. IV, p. 50.—On *Acer rubrum*, Carolina (Ravenel). Effused, for many inches, undulate, wine colored, pulverulent, perithecia hidden. Sporidia cymbiform, uninucleate, $9-10 \times 3\frac{1}{2}$, Asci linear.

Hypoxylon jecorinum, B. & Rav. Grev. IV. p. 50.—Effused, an inch or more long and broad, at first covered with a tawny yellow powder then liver colored, dotted with the dark ostiola. Sporidia sec. Cooke l. c. 9×4 micr. The specimens in Rav. Fungi Car. IV, 37, have the stroma subelliptical, $1-2 \times 1$ cm. and sporidia $7-8 \times 3-4$. Florida specimens collected by Col. Calkins during the winter of 1887, have the stroma $1\frac{1}{2}-3 \times 2-2\frac{1}{2}$ cm. Ravenels specimens are on bark of *Acer rubrum* and the Florida specimens are also on bark of some deciduous tree. The

perithecia form a single layer on the surface of the black carbonaceous 1 mm. thick stroma, and are oval in shape and closely packed, about $\frac{1}{2}$ mm. high with their apices slightly projecting thus making the surface of the stroma finely papillose.

HYPOXYLON IANTHINUM, Cke. Grev. XI, p. 132.—“Stromate in ligno effuso, pulvere ianthino ebsito, demum nigricante. Peritheciis stipatis, obovatis, vertice subrotundatis confluento-planisve. Ostiolo minute papillato. Ascis cylindraceis. Sporidiis ellipticis, obtusis, continuis, fuscis, 15 x 6 micr. U. States, (Ravenel No. 1579.)” This species is evidently widely diffused in this country, as we have specimens collected at Bellville, Canada, by Dr. Macoun, Clyde, N. Y. by O. F. Cook, Jr., and in Louisiana by Rev. A. B. Langlois. The Canada and La. specimens have been submitted to Dr. Cooke for examination and he pronounces them to be *H. ianthinum* Cke. of which the original was collected in Potsdam, N. Y., many years ago. The name is badly chosen and misleading for the stroma in all the specimens (unless it be the Potsdam specimen, which is now lost or mislaid) is of a glaucous or grayish white, about the same as in *H. atropunctatum*, Schw. or *H. pruinatum*, Kl., without any *purplish* shade whatever. The description above quoted applies in other respects tolerably well. Stroma thin elliptical or subelongated 1—2 x $\frac{1}{2}$ —1 cm. and in the Louisiana specimens subconfluent, distinctly papillose.

HYPOXYLON ATROPUNCTATUM, Schw. Syn. Car. No. 44.—On dead trunks of oak from N. Y. to Florida. Broadly effused, smooth, white, dotted with the smooth, convex, black ostiola and surrounded with a black sterile margin, substance very hard and rigid, black inside. Perithecia in a single layer, not crowded, ovate, about $\frac{1}{2}$ mm. high. Asci cylindrical, abruptly contracted below into a short stipitate base, about 150 x 10—12. Sporidia uniseriate acutely elliptical or almond shaped, opaque, 25—30 x 10—12. (*Anthostoma*, Sacc. Syll.) According to Schweinitz this species is sometimes interruptedly continuous for 20 feet along the standing trunks of oak (*Q. falcata*) which are also nearly surrounded by it.

HYPOXYLON CROCOPEPLUM, B. & C. Grev. IV, p. 49.—On decayed bark; South Carolina, (Ravenel). Nearly $\frac{1}{2}$ inch broad, irregular, depressed, clothed with a dense coat of red ferruginous (peroxyd) powder; perithecia rather prominent, with a minute ostiolum. Sporidia dark, shortly cymbiform, 13—14 x 8 (Sec. Cooke l. c.)

b. *Externally black.*

HYPOXYLON STIGMATEUM, Cke. Grev. VII, p. 4.—On bark of dead oak, California (Harkness). On beech bark, Ohio (Morgan

271). On an old log, Louisiana (Langlois 743.) On fallen logs, So. Ca. (Ravenel F. Am. 649.) Effused, black, crustaceous, thin ($1-1\frac{1}{2}$ mm.), papillose from the prominent ostiola, 3—5 or more cm. broad, originating beneath the cuticle of the bark which it throws off in the same manner as *Nummularia Bulliardi* Tul., which it much resembles. Asci linear-cylindrical. Sporidia uniseriate elliptical with the ends subacute, sometimes navicular, dark, 28×8 micr. (sec. Cke)— $20-23 \times 10-12$ in the La. specc. $20-25 \times 10-12$ in the F. Am. specc.

HYPOXYLON EPIRHODIUM, B. & Rav. Grev. IX, p. 51.—On branches of rose. South Carolina, (Ravenel). "Effused, thin, forming small black patches about two lines across, papillose from the slightly prominent ostiola; asci linear; sporidia uniseriate, elliptic." Sporidia sec. Cke. l. c. $9 \times 3\frac{1}{2}$ micr.

HYPOXYLON PUNCTULATUM, B. & Rav. (sub *Diatrype*) Grev. IV, p. 94. *Nummularia punctulata* (B. & Rav.) Sacc. in Syll. On bark of dead oak. Common. Originating beneath the cuticle which is soon thrown off, closely adnate, black, smooth and polished, effused and spreading for 5—20 cm. or more, but not projecting above the bark, ostiola punctiform, depressed, appearing like minute punctures made with the point of a pin, margin sterile, thin. Perithecia monostichous, elongated-ovoid rather more than $\frac{1}{2}$ mm. high, covered above by the thin carbonaceous stroma. Asci cylindrical with a slender base, 100×7 micr. with filiform paraphyses, (p. sp. 75—80 micr. long,) Sporidia uniseriate, elliptical, yellowish-hyaline, 2-nucleate, $7-8 \times 5$, ends flattened while lying in the asci. We have not seen them free and cannot say whether they become opaque. The asci and sporidia are generally poorly developed but Mr. Everhart finds them as above noted at West Chester.

HYPOXYLON TINCTOR, (Berk.) Hook, Lond. Journ. Bot IV, p. 311. — On dead trunks and limbs of various deciduous trees from Ohio west to Kansas and south to Louisiana, Florida and Texas. Stroma effused, dull black, very hard, exhibiting all the inequalities of the matrix, 1 mm. thick, 5—20 cm. long and 2—5 cm. wide, margin thin and sterile, surface nearly smooth but under the lens distinctly papillose from the slightly prominent ostiola. The subjacent wood is deeply tinged orange red and is rendered very hard. Perithecia monostichous, crowded, elongated ($\frac{3}{4}$ mm.) covered above with the hard brittle shining black stromatic layer. Asci 112 (p. sp. 90—100) $\times 7-8$ micr. with abundant filiform paraphyses. Sporidia uniseriate, pale brown with a single rather large nucleus, oblong-navicular, 15×6 micr. with the ends subobtuse. The stroma

originates under the cuticle which is soon thrown off. The general appearance is that of *H. punctulatum* B. & Rav. and it has the same hard brittle stroma as that species.

HYPOXYLON EFFUSUM, Nitschke, Pyr. Germ. p. 48.—On decaying wood of *Ulmus Americana*, Concordia, Mo., Dec. 1888, Rev. C. H. Demetrio, 56(b). (Also Kansas, Kellerman & Louisiana Langlois, No. 299). Stroma superficial, thin, forming black crust like patches of various size and shape, 3—4 mm. across or often confluent seriate 3—4 cm. or more by $\frac{1}{2}$ —1 cm. wide. Perithecia in a single layer, rather large (the central cavity being about $\frac{1}{2}$ mm. diam.), prominent but mostly flattened above with a central papilla much as in *H. annulatum* Schw. but not so distinctly annulate depressed. The specimens were old and the asci dissolved but the sporidia were still tolerably abundant, ovate-oblong and subnavicular, pale-brown $6-8 \times 3-3\frac{1}{2}$, rounded and obtuse at the ends. The perithecia and sporidia were rather larger than in Saccardo's specimen in M. V. 1470 and the stroma thinner but there can hardly be any doubt that our specimens are correctly determined. Nitschke's specimens were gathered in the spring and were then in good condition. The Mo. spec. gathered in the fall would naturally be past their prime assuming that the species matures in the spring of the year.

HYPOXYLON CONCURRENS, B. & C. Grev. IV, p. 93. — Carolina (Ravenel, without habitat), on *Acer macrophyllum*, Cala. (Harkness.) "Perithecia connate forming a thin black uniform stratum, very minutely granulated, the upper part only exposed; ostiola minute, papillæform: sporidia shortly cymbæform, uninucleate." (10 x 5 micr. Cke.)

HYPOXYLON BEAUMONTII, B. & C. Grev. l. c.—Alabama, Beaumont, Nos. 4617, 4857. No habitat given. "Perithecia rather small, at first slightly brown, then black, smooth, with a distinct papillæform ostiolum; asci linear; sporidia uniseriate, oblong-elliptic, 10 micr. long, uniseptate." Cooke in Grev. XI, p. 134 says of this, "Sporidia elliptic, continuous, fuscous. On branches of, *Coniferae*, United States. The sporidia are certainly not septate in the original specimens. It is an effused *Hypoxylon*."

Hypoxylon crustaceum, Nitschke, Pyren. Germ. p. 49.—(Sec. Cooke not *Sphaeria crustacea*, Sow.) On decorticated wood, British Columbia (Macoun.) Stroma superficial, blackening the wood around it both on the surface and within, more or less effused, tolerably thick, sooty black or sometimes gray-pruinose, formed apparently only by the connate perithecia which are about $\frac{3}{4}$ mm. diam. globose and either densely crowded or loosely aggregated

or even partially free, the rounded apex with distinct papilliform ostiohum free, with only their bases united, rarely perithecia occur only half as large as usual. Asci cylindrical, long pedicellate, with abundant long filiform paraphyses. Sporidia obliquely monostichous, ovate, obtuse at each end, inequilateral or nearly straight, light brown $8-10 \times 4-5$. The Brit. Columbia specimens agree accurately with the above description except the perithecia are subferruginous-pulverulent and the sporidia oblong-navicular. Asci 150×5 micr. (p. sp. 80×5 micr.) Clusters of connate perithecia (stromata) $2-5 \times 2-3$ mm. or interruptedly confluent for 2 cm. long. The specimen in Rab. F. E. 2433 has the perithecia more sparingly connate and black but there is no other difference.

HYPOXYLON SERPENS, (Pers.) Syn. p. 20.—Obs. Myc. 1, p. 18. On decaying wood and bark of various deciduous trees. Stroma effused, thin, appanate, black, variable in form and size, often in narrow, elongated strips $2-3$ mm. wide and $3-6$ cm. long, but also in small subelliptical or irregular shaped patches $1-2$ cm. long by $\frac{1}{2}-1$ cm. wide. Perithecia subglobose, crowded, rather large, rounded and prominent above or rarely slightly depressed around the central papilla then only slightly prominent and the surface of the stroma not so distinctly roughened. Conidial layer pulverulent, cinereous. Conidia subglobose, minute, acrogenous on rather long, branching septate sterigmata. Asci-cylindrical, long-pedicellate, $75-100$ micr. long (p. sp.) by $6-8$ micr. wide with abundant paraphyses. Sporidia obliquely uniseriate, sub-cylindrical, rounded at the ends, oblong-cylind., subinequilateral or almost curved, seldom straight, becoming dark, $12-16 \times 5-6$. This is called a common and widely diffused species but as we have some doubt as to whether we properly understand it we have taken the above description from Nitschke's *Pyr. Germ.* The specimens distributed in N. A. F. under this name agree better with *H. insidens*, Schw. They are certainly not the typical form for the perithecia are small, mostly $\frac{1}{2}$ mm. or less and only slightly prominent and the sporidia are mostly only $8-10 \times 3-4$; they are however the same as those in Rav. specimens in *Fungi Car.* IV, 34, which have the stroma of the normal form. The N. A. F. specimens appear to be the same as the *H. colliculosum*, Schw. in Rav. F. Am. 742 both in outward appearance and in the size, shape and color of the sporidia which are oblong-elliptical, subinequilateral, pale brown, $8-10 \times 3-4$, though Cooke in *Grevillea* XI. p. 125, says they are $12-13 \times 5$ micr. We have therefore for the present to leave the matter in doubt.

HYPOXYLON INSIDENS, (Schw.) Syn. Car. No. 122.—(*Fuckelia insidens* (Schw.) Cke. Grev. XII, p. 52.) On rotten wood or oftener on bark, Carolina and Penna. (Schw.) Stroma innate, effused, nearly round, brown-black, partly sterile, apparently superficial, but the base immersed in the matrix and surrounded by a faint circumscribing line. Perithecia more or less prominent, flexuous, subpapillate, half as large as a mustard seed. Asci cylindrical, sporidia uniseriate, elliptical, pale-brown, 8 x 4 micr. According to Mr. W. C. Stevenson Jr., the specimens in N. A. F. 164, labeled *H. serpens*, agree with the specimens of *H. insidens*, Schw. in Herb. Schw.

HYPOXYLON COLLICULOSUM, Schw. Syn. Car. No. 82.—On rotten oak wood, Carolina & Penna. (Schw.) On bark of rotten ash, sea-board of S. C. (Rav. F. Am. 742)? Effused thin, colliculose, rugose, black. Perithecia very large, covered with a thin crust which is papillate from the minute ostiola, and with flattened bases not immersed in the wood nor surrounded by any circumscribing line, subdistant but connected by the stromatic crust. Margin various, shining as if oiled, surface very uneven and rimose. Sporidia 12—13 x 5 (Cke.) As already stated, the specimens in Rav. F. Am. do not agree with the description of *H. colliculosum* having both perithecia and sporidia too small and are probably referable to *H. insidens*, Schw.

NEW SPECIES OF KANSAS FUNGI.

BY W. A. KELLERMAN AND W. T. SWINGLE.

SPHÆROTHECA PHYTOPTOPHILA, Kell. & Swingle.—Mycelium very sparse: perithecia globular, dark brown or black, obscurely reticulate, 60—80 micr., mostly 65—75 micr. in diameter; appendages few, more or less evanescent, dark brown, irregular but usually about 6 micr. in diameter and mostly longer than the diameter of the perithecia, often septate. Asci large, hyaline, broadly oval, containing 8 spores, which are hyaline, oval, regular in size, 15 x 24—18 micr. Conidial stage: mycelium more abundant, conidiophores hyaline, erect, total height (including

conidia) 150—220 micr., by 9—13 micr. in diameter; conidia oval hyaline, continuous, granular within, 15×21 —29, mostly 15×27 micr. On *Celtis occidentalis*, Manhattan, Kansas.

The fungus is found associated with *Phytoptus* (an undescribed species) on Hackberry (*Celtis*). The distortions caused by the insect, or perhaps by both insect and fungus, consist of a multitude of abnormal, more or less abortive branchlets that form a compact knot, $\frac{1}{2}$ to $1\frac{1}{2}$ inches in diameter; a few of the branchlets are prolonged a few inches and themselves bear smaller knots of similar structure. The abortive branchlets have excessively numerous buds all infested by the insect and covered by the fungus. The conidial stage is found associated with the perithecia and sometimes even extending out on the twigs to the under side of the leaves. The perithecia are found in the spring but do not mature their spores till late fall or winter.

SEPTORIA CASSIÆCOLA, Kell. & Swingle.—Perithecia occupying indefinite portions of the languishing cotyledons of *Cassia chamaecrista*, abundant but not crowded, amphigenous, small, sub-immersed, black, 70—90 micr. in diameter. Sporules filiform, straight or slightly curved, continuous, hyaline, variable, 20 — $40 \times \frac{1}{2}$ — $1\frac{1}{2}$, often $36 \times 1\frac{1}{2}$ micr. May 1888, Manhattan, Kansas.

COLLETOTRICHUM CARPOPHILUM, Kell. & Swingle.—Spots depressed, orbicular, often confluent and occupying the greater portion of the lower side of the fruit, $\frac{1}{2}$ —1 cm. in diameter, brownish or dusky, centre of spot pallid, usually surrounded by a reddish margin. Acervuli numerous, crowded black, applanate, variable in size. Bristles rather abundant, black, dusky, usually curved more or less, regularly tapering from base to the acutish point, 60—100 micr. in length, 5—6 micr. in width at base. Sporules arcuate, fusoid, acute at both ends, 16 — $22 \times 2\frac{1}{2}$ —4. Mostly 18 — 21×3 — $3\frac{1}{2}$, nucleate. On living fruit of *Astragalus Caryocarpus*, May and June, 1888, Manhattan, Kansas.

CERCOSPORA CEANOETHI, Kell. & Swingle.—Spots reddish-brown or russet, circular or subcircular, seldom confluent, abundant, equally distinct on both sides of the leaf, 1—5 (mostly 2—4) millimeters. Hyphæ pale brown, continuous or very rarely septate, simple, often nucleate, subnodulose above, hypophyllous sometimes amphigenous, densely fasciculate, 20 — 36×3 — $4\frac{1}{2}$, forming minute tufts which are congregated in the centre of the spot. Conidia curved or straight, narrowly cylindrical or

slightly attenuated, ends obtuse, 3—6 septate, mostly 4—5 septate, hyaline 45—90 x 2—4. A *Macrosporium* sometimes occurs sparingly on the same spots. On *Ceanothus ovatus*, Manhattan, Kansas.

PUCCINIA SCHEDONNARDI, Kell. & Swingle.—II. Sori amphigenous, but mostly hypophyllous, soon erumpent, surrounded by the ruptured epidermis, small (one-fifth to one-half millimetre in diameter) oval or oblong, solitary. Uredospores dull orange, globular, 20—25 micr. diameter, mostly 22 micr., always free from pedicels when mature, covered with short sparse tubercles; pedicels subpersistent, hyaline or slightly tinted, enlarged at tip, base 3—5 micr. in diameter, tip 5—8 micr.

III. Sori amphigenous; small (one-sixth to one-half millimetre in diameter) mostly circular, solitary or rarely confluent, though often abundant; teleutospores clear brown slightly constricted at the middle and often slightly thickened at the apex, subglobose, oval or oval-oblong, 27—35 x 20—26, mostly 28—30 x 21—24, pedicel variable, tapering, tinted, usually once to thrice as long as the spores. On leaves and sheaths of *Schedonnardus Texanus*. II. July and August, III. fall and winter 1888, Manhattan, Kansas.

ÆCIDIIUM FUMARIACEARUM, Kell. & Swingle.—Spots none; æcidii growing on stem, petioles and leaves of *Corydalis aurea*. var. *occidentalis*, and on petioles and leaves of *Dicentra cucullaria*; when on leaves occupying definite areas, somewhat crowded, amphigenous but mostly hypophyllous, more scattered on the stems which are more or less distorted. Peridium cylindrical, short ($\frac{1}{4}$ — $\frac{1}{2}$ millimetre long), $\frac{1}{4}$ — $\frac{1}{3}$ millimetre in diameter; margin usually irregularly torn, moderately reflexed, the peridial cells crumbling away and leaving the margin nearly even and entire, white below, polygonal, mostly longer than broad, above nearly oval, 27—36 x 12—27, mostly 24—30 x 15—24. Spores globose or globose-oval, dull orange yellow, cell-wall rather thin, surface covered with numerous minute tubercles, 18—24 x 16—20, mostly 20—24 x 17—19. On *Corydalis aurea*. var. *occidentalis* and *Dicentra cucullaria* April and May, 1888, Manhattan, Kansas, also sent by M. A. Carleton from Wichita (No. 88) and Cloud County (No. 88a.) Differs from *Aecidium Dicentrae*, Trelease, in its smaller, clustered perithecia and larger spores.

CORRECTION.

At the top of pages 87, 89 and 91 of the current No. of "New Fungi" read *Synopsis of Hypoxylon*.

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THE JOURNAL OF MYCOLOGY.

Price, One Dollar per Annum,

Single Numbers, Fifteen Cents.

VOL. I, \$2.00 VOLS. II AND III, \$1.00 EACH.

PUBLISHED MONTHLY,

Address all communications to

W. A. KELLERMAN, PH. D., MANHATTAN, KANSAS.